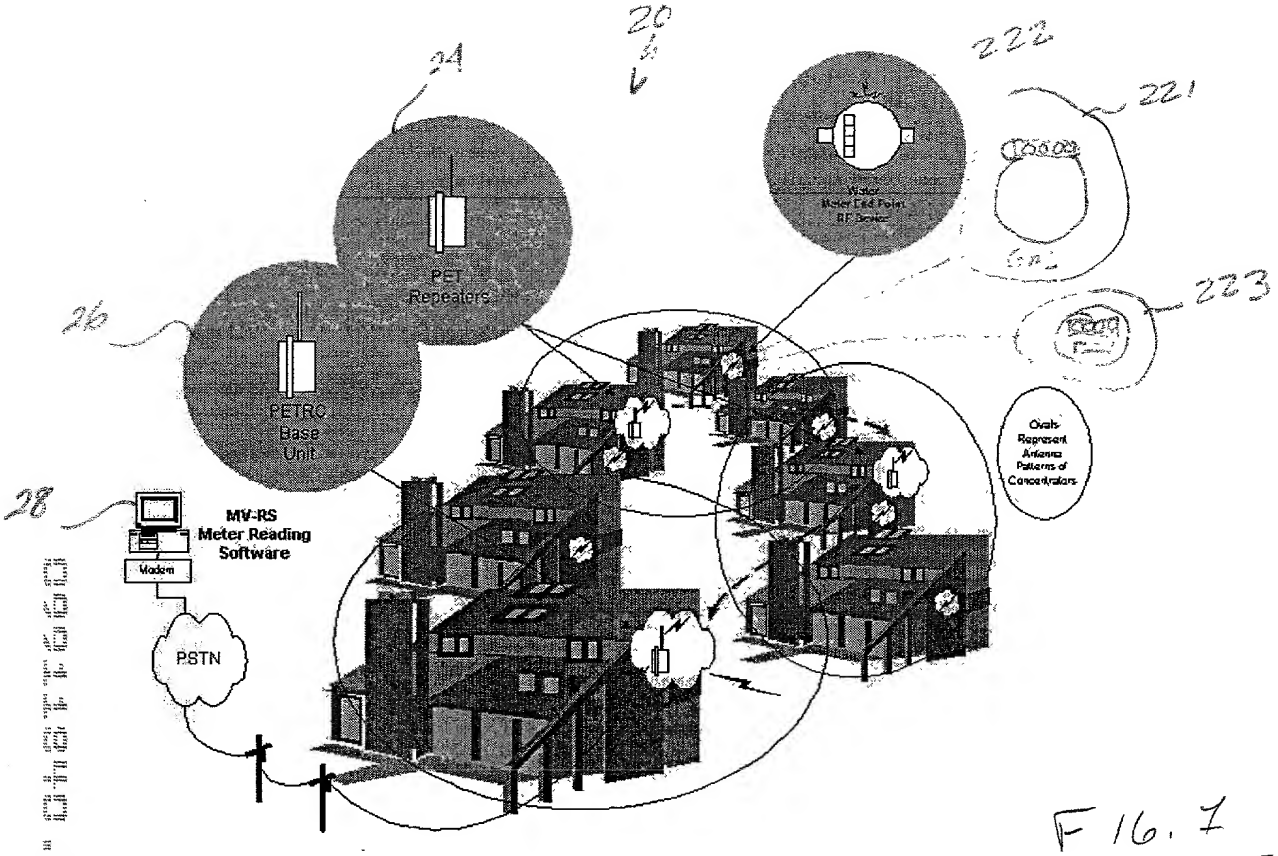

20
24
222
221
223
26
PET
Repeaters
PETRO
Base
Unit
Ovals
Represent
Antenna
Patterns of
Concentrators
28
MV-RS
Meter Reading
Software
Modem
PSTN

F16. 1

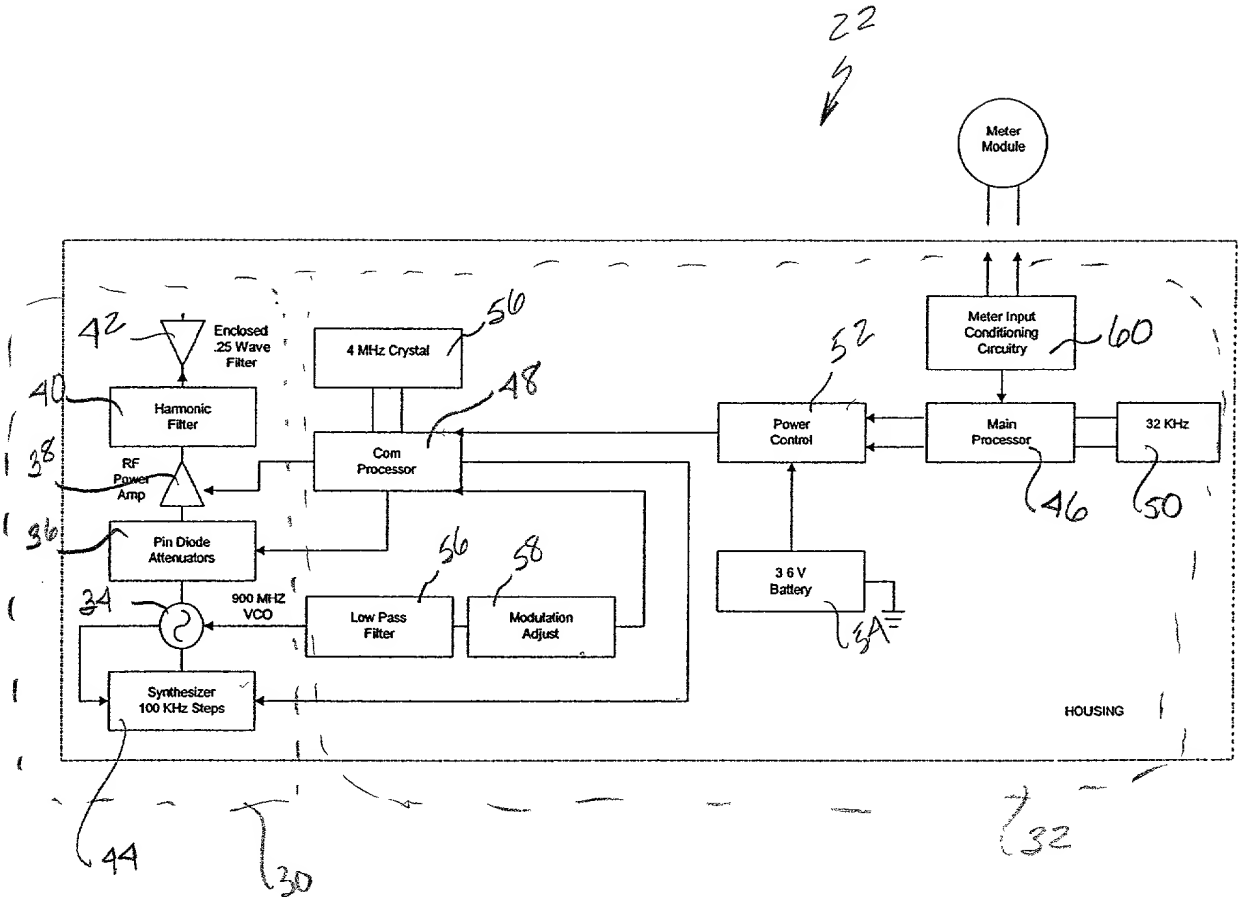
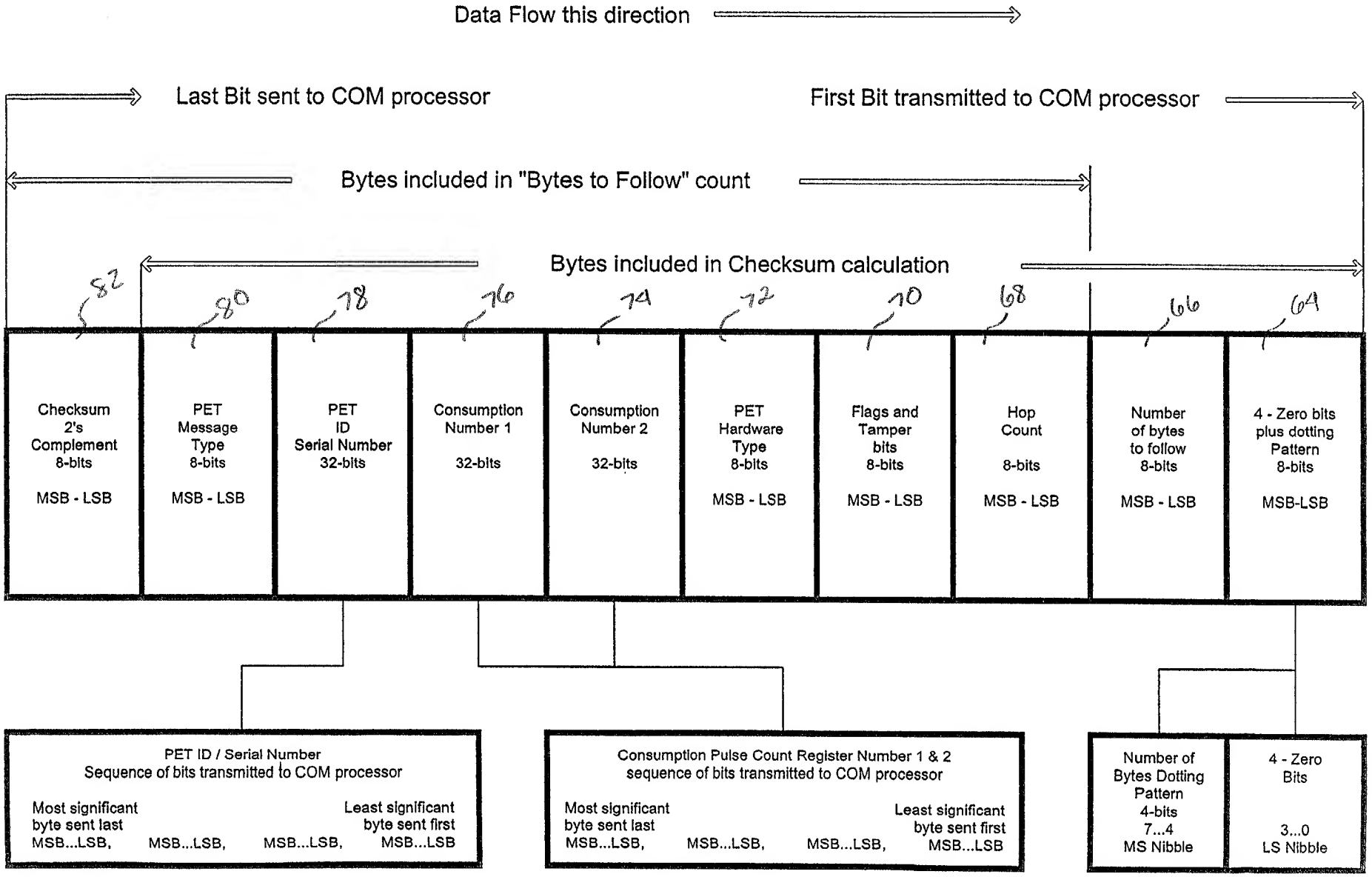

22
Meter Module
42
Enclosed .25 Wave Filter
4 MHz Crystal
56
Meter Input Conditioning Circuitry
60
52
40
Harmonic Filter
48
Power Control
Main Processor
32 KHz
38
RF Power Amp
Com Processor
46
50
36
Pin Diode Attenuators
56
58
34
900 MHZ VCO
Low Pass Filter
Modulation Adjust
3 6 V Battery
54
Synthesizer 100 KHz Steps
HOUSING
44
30
32

FIG. 2

PET Message Bit Sequence from Main Processor to COM Processor

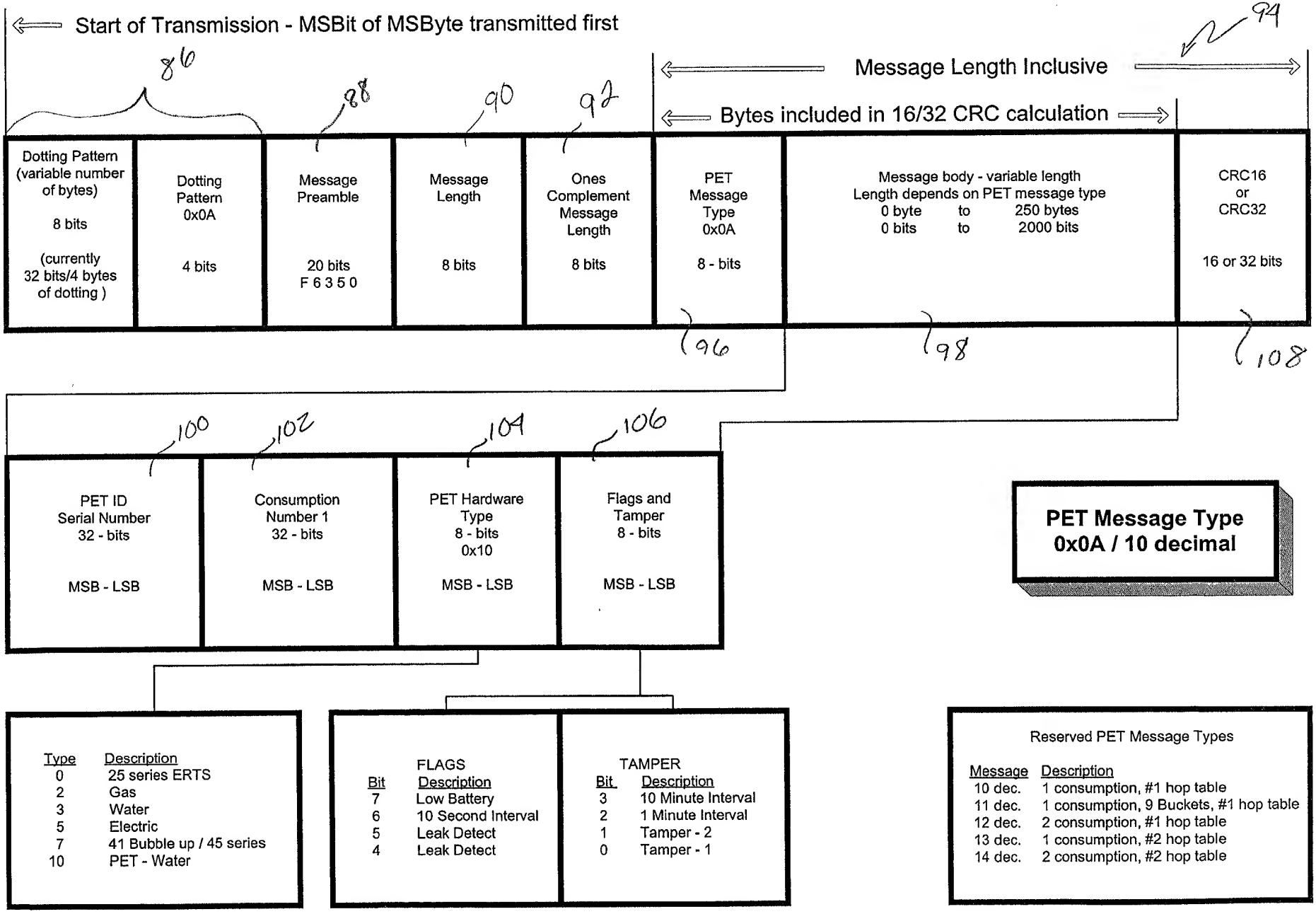
FIG. 3



12/30/99 JM//DD

PET Protocol, Message Structure, Top Level & Message Type "10" (decimal)

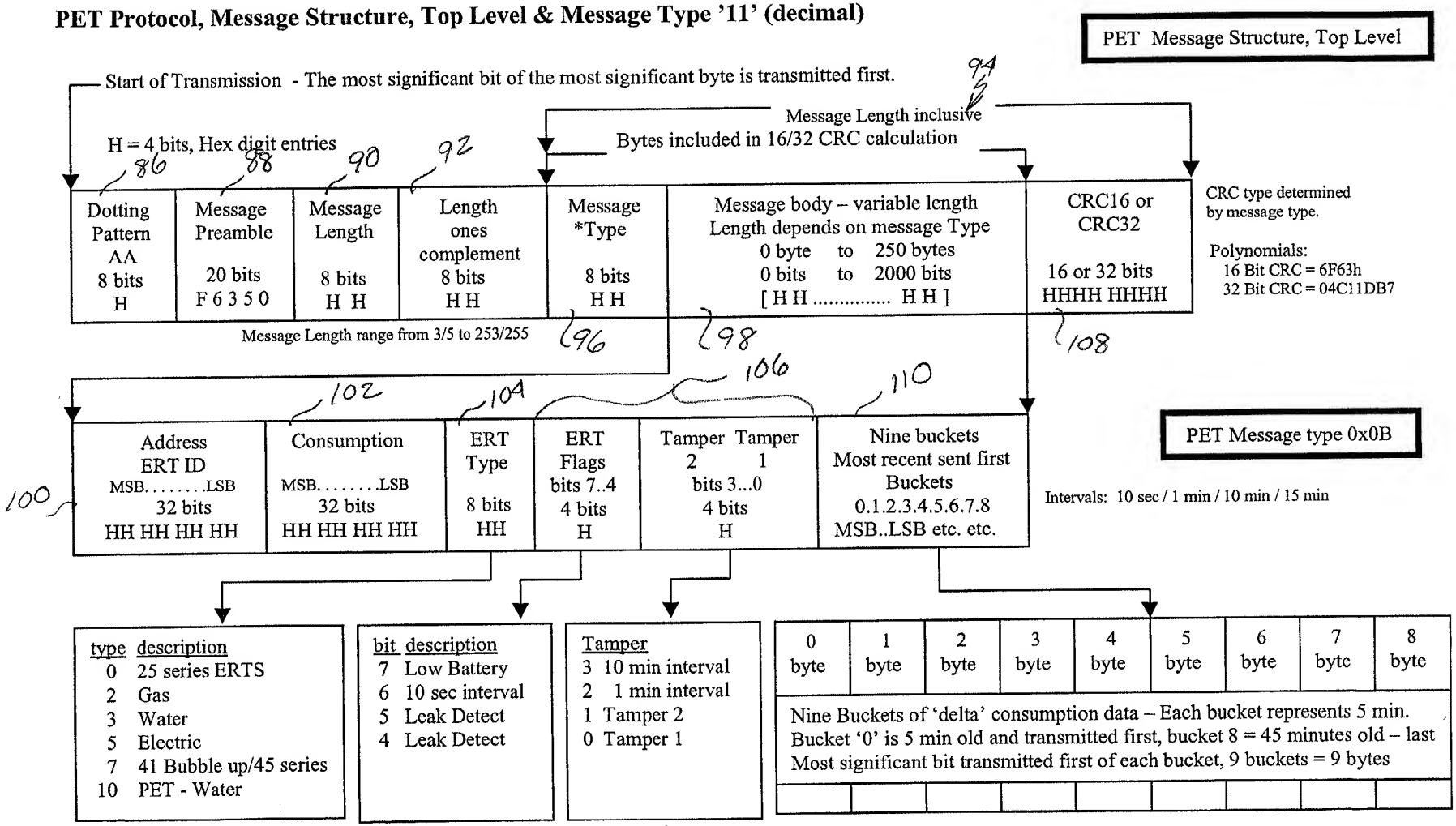
FIG. 4



3/21/00 RND

FIG. 5

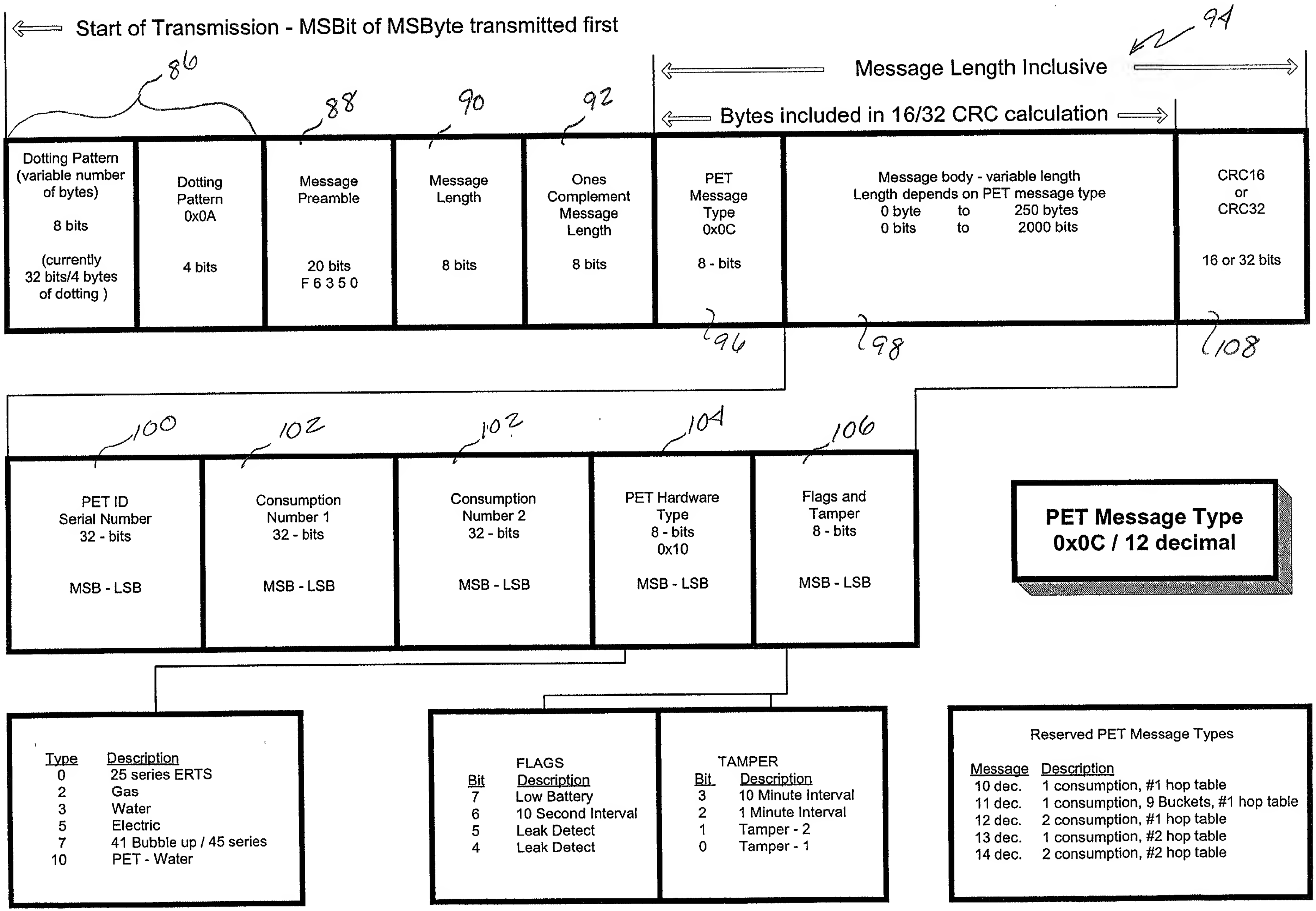
PET Protocol, Message Structure, Top Level & Message Type '11' (decimal)



*If message type is equal to 255 then the next byte is the message type unless it is also 255 then the following byte is the message type.

FIG. 6

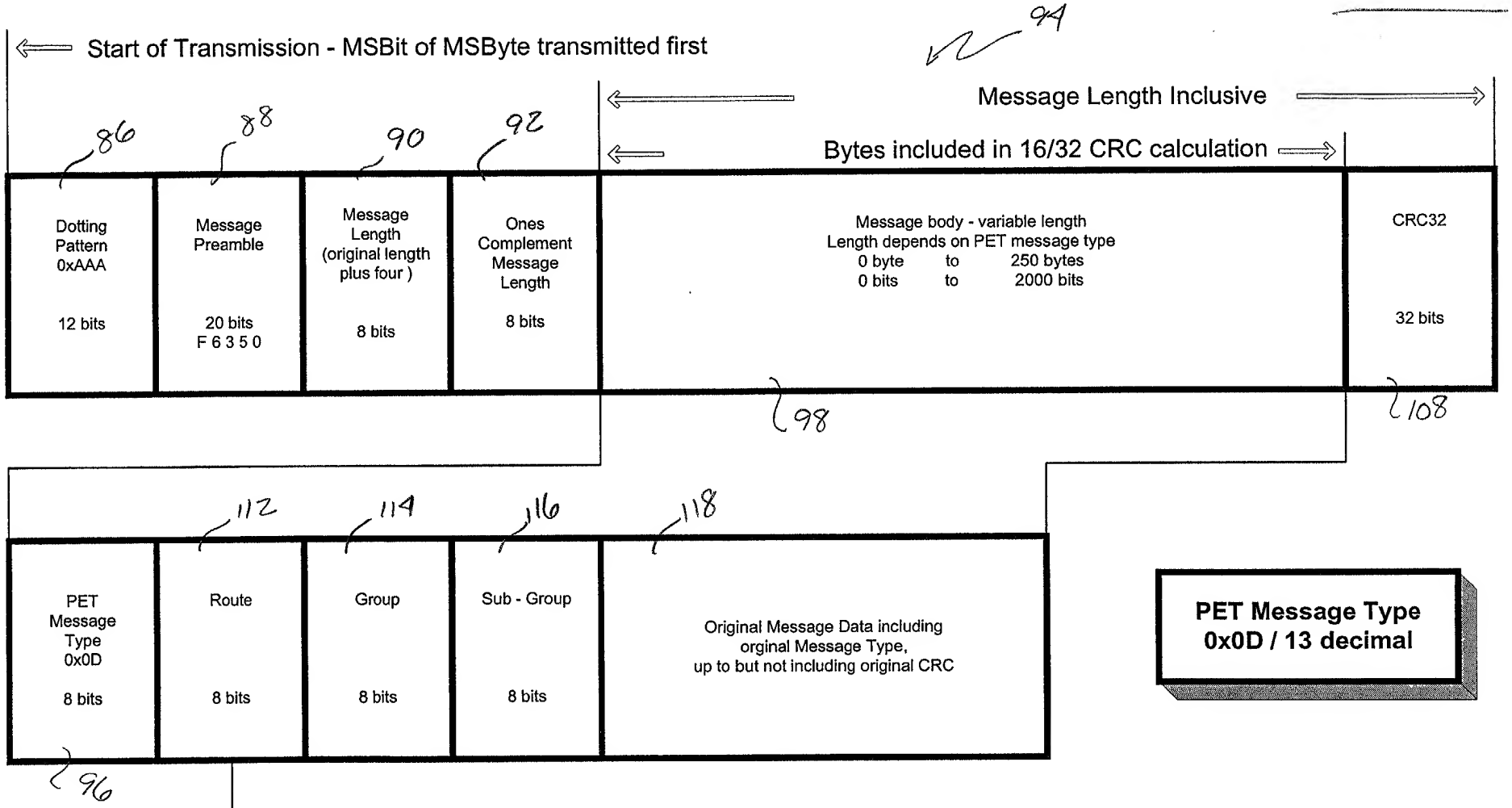
PET Protocol, Message Structure, Top Level & Message Type '12' (decimal)



3/21/00 RND

PET Protocol, Message Structure, Top Level & Message Type "13" (decimal)

FIG. 7



PET Message Type 0x0D / 13 decimal

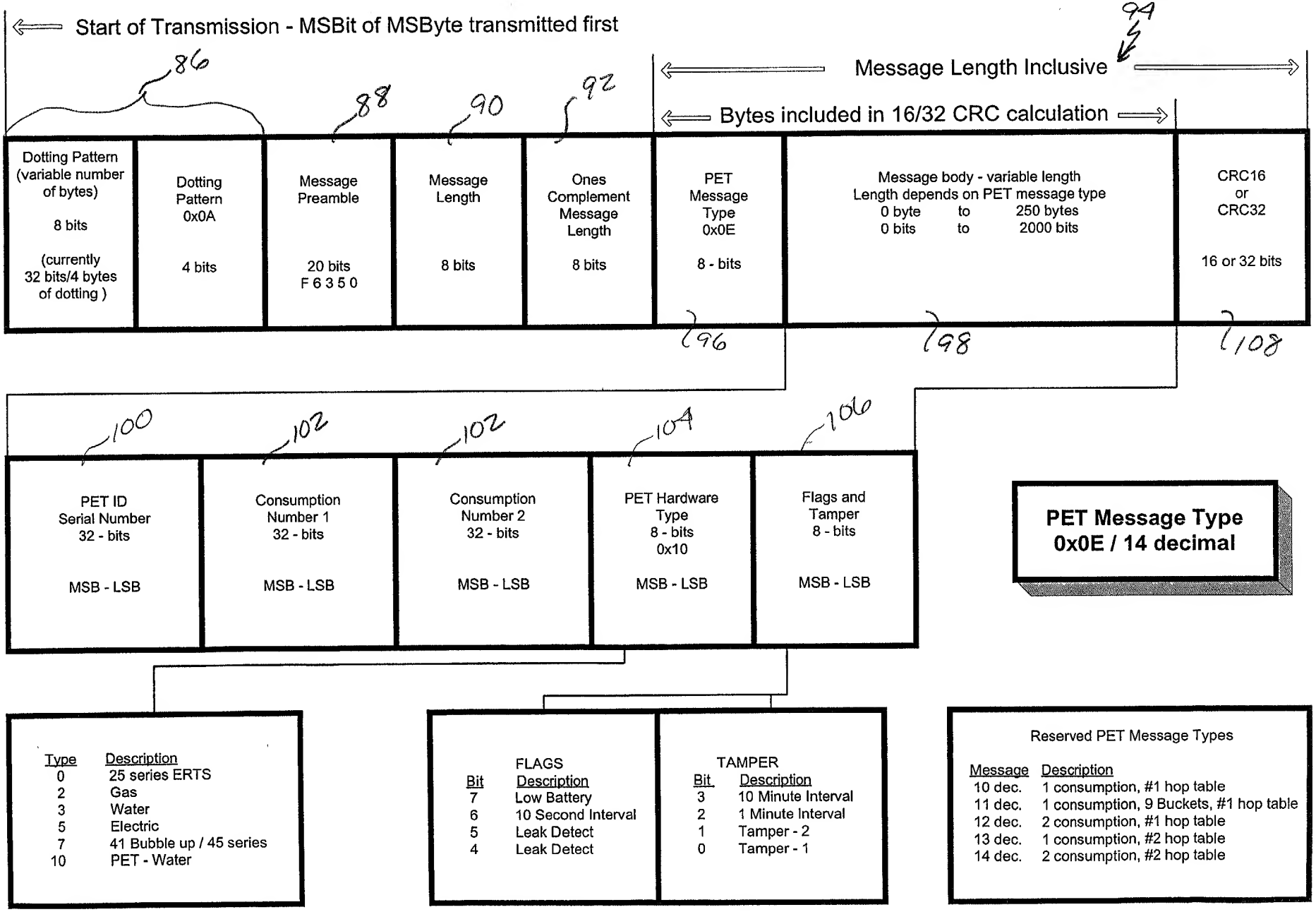
Reserved PET Message Types

Message	Description
10 dec.	1 consumption, #1 hop table
11 dec.	1 consumption, 9 Buckets, #1 hop table
12 dec.	2 consumption, #1 hop table
13 dec.	PET Repeater Message
14 dec.	1 consumption, #2 hop table
15 dec.	2 consumption, #2 hop table

03/22/00

PET Protocol, Message Structure, Top Level & Message Type "14" (decimal)

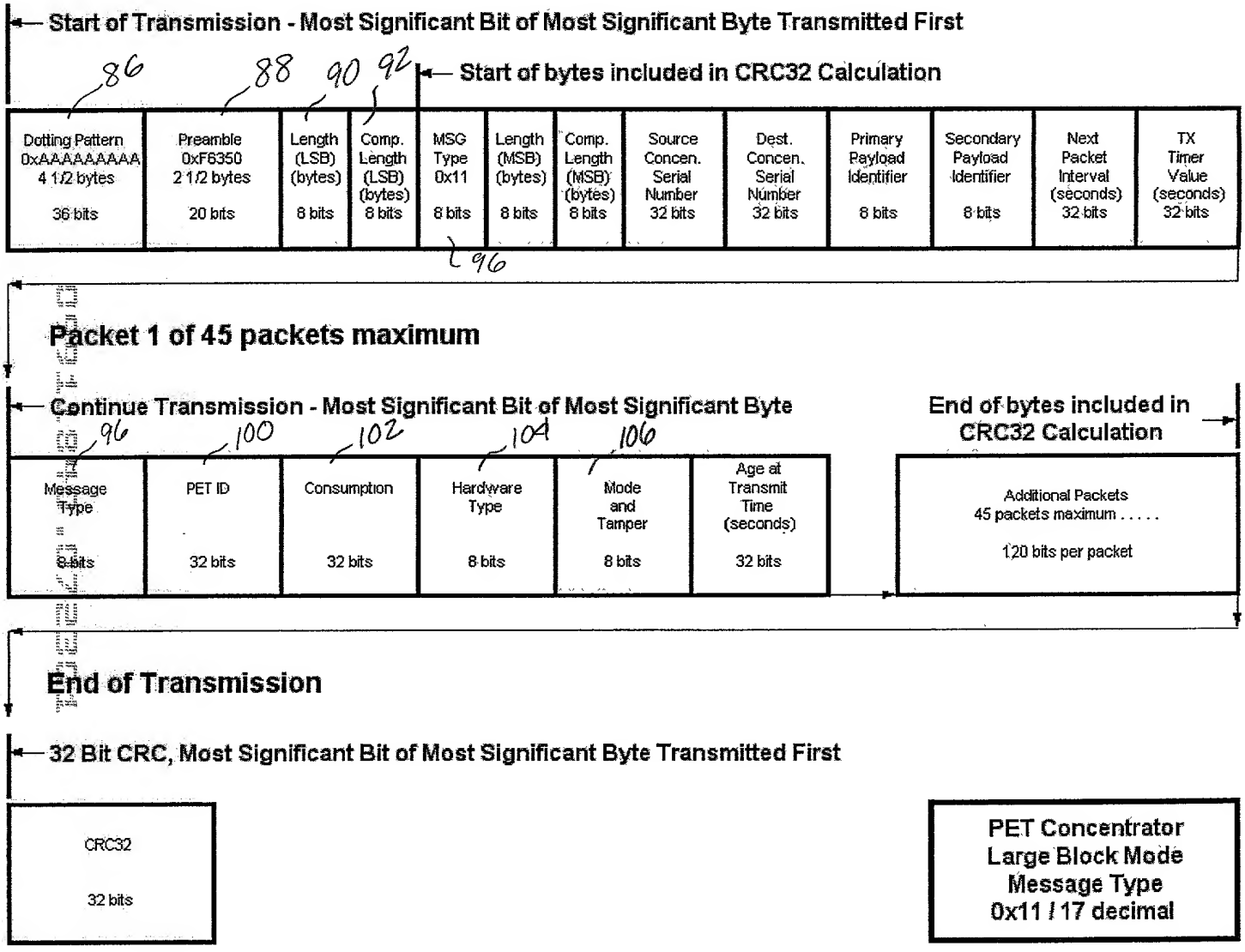
FIG. 8



3/21/00 RND

FIG. 9

Inter-Concentrator Communications, Large Block Mode



2/12/01 rnd

2.1 Logic CB Block Diagram

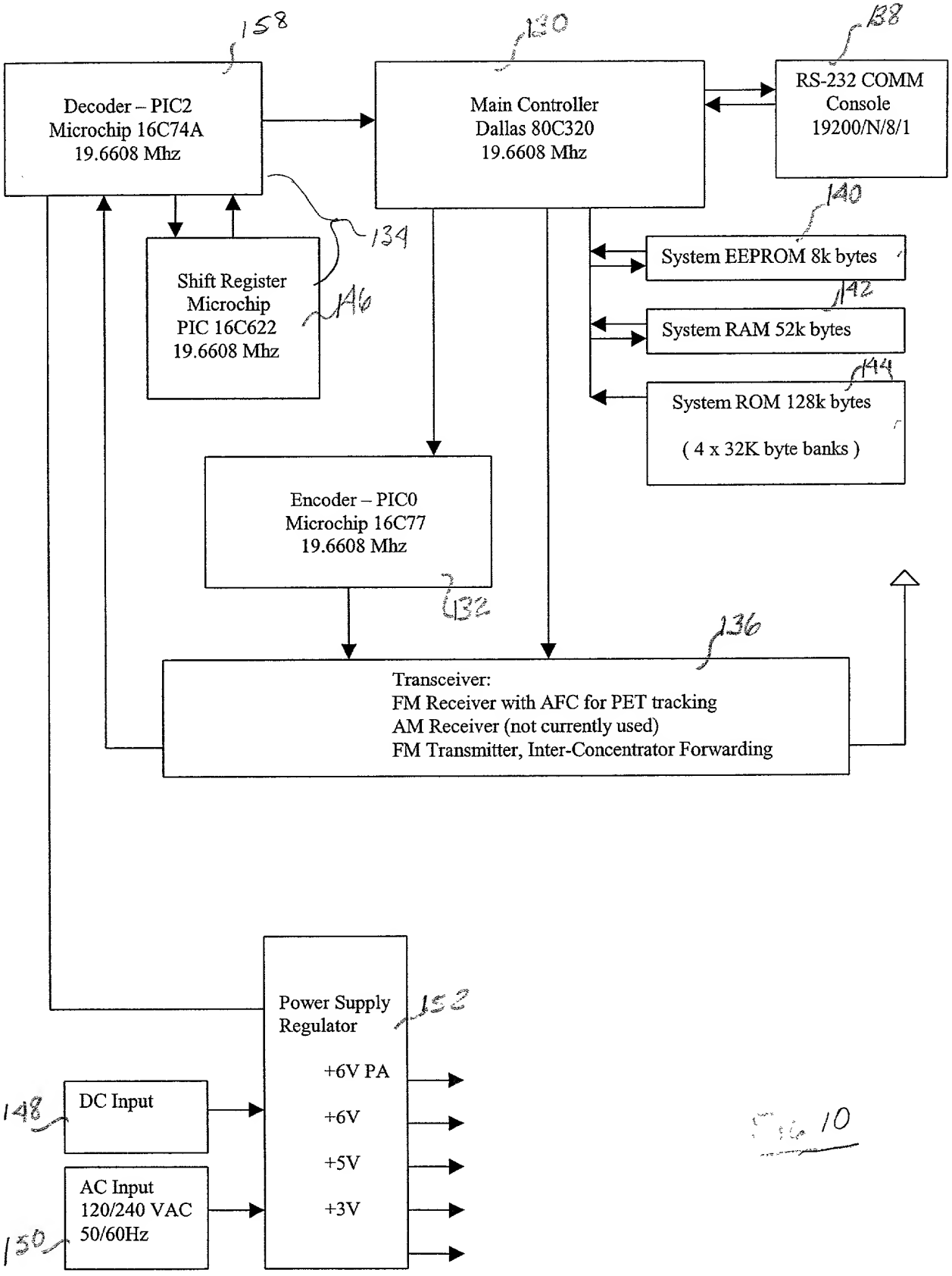
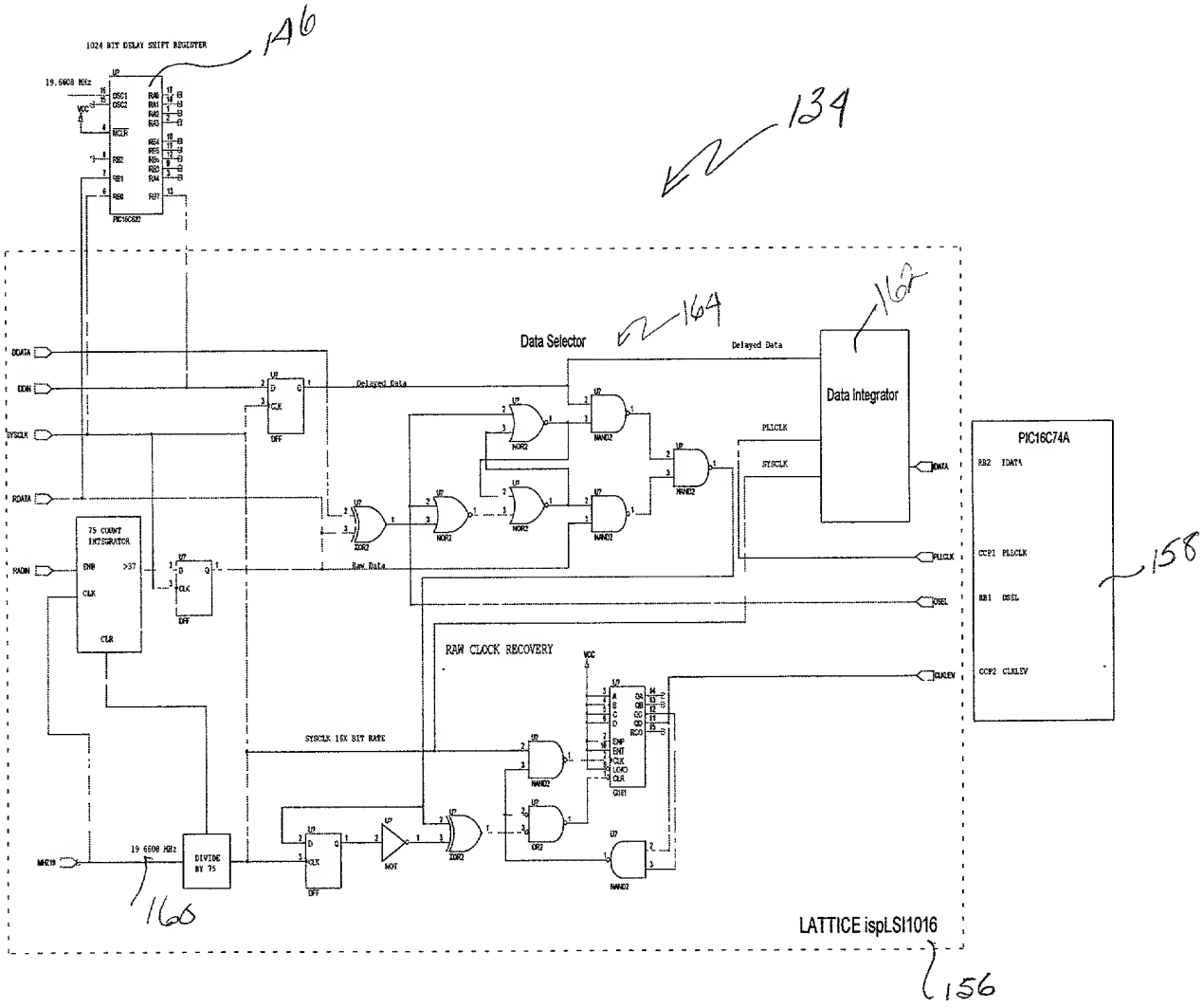


Fig. 10

5.1 Decoder Block Diagram



F16.11

Decoder Block Diagram

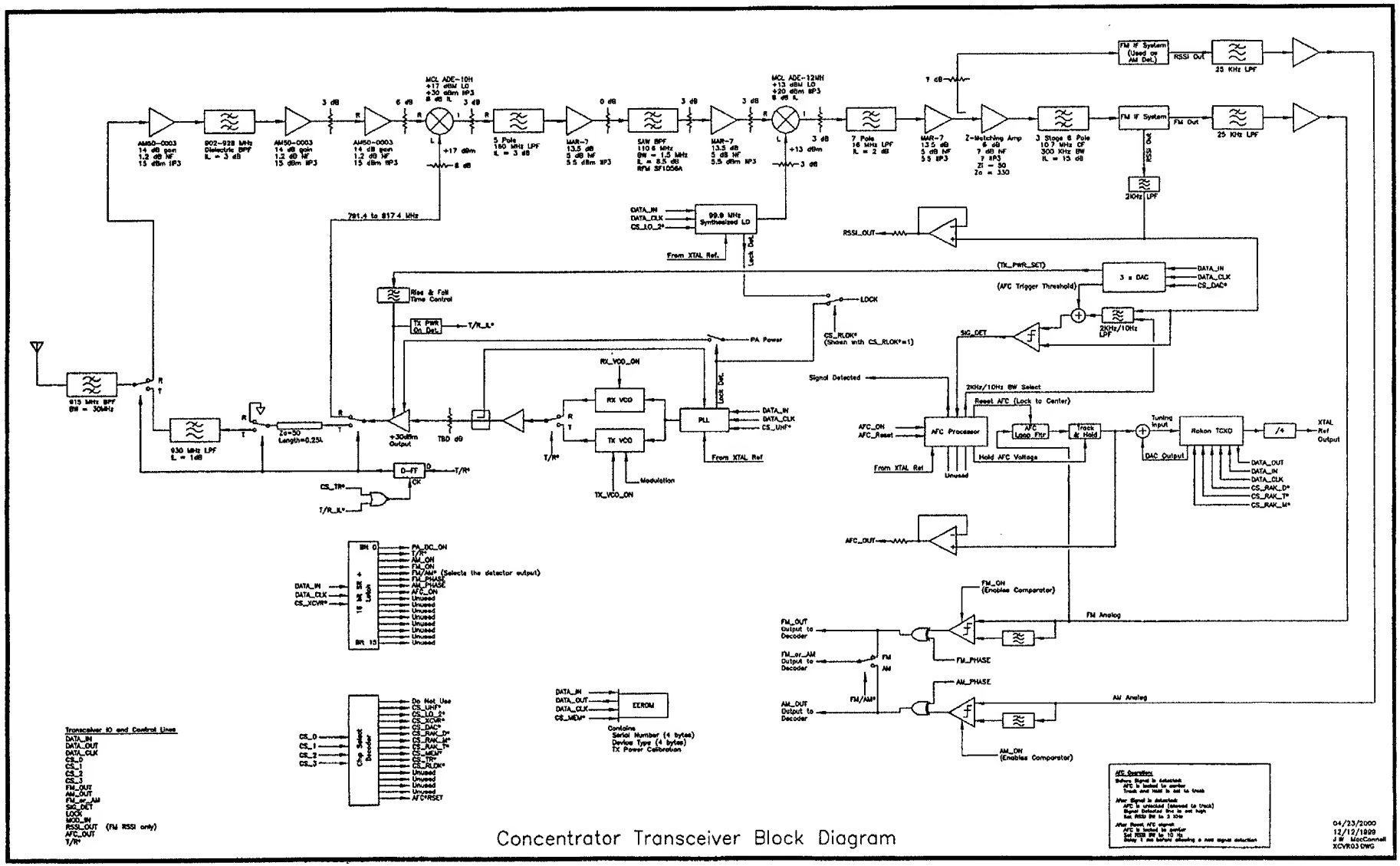
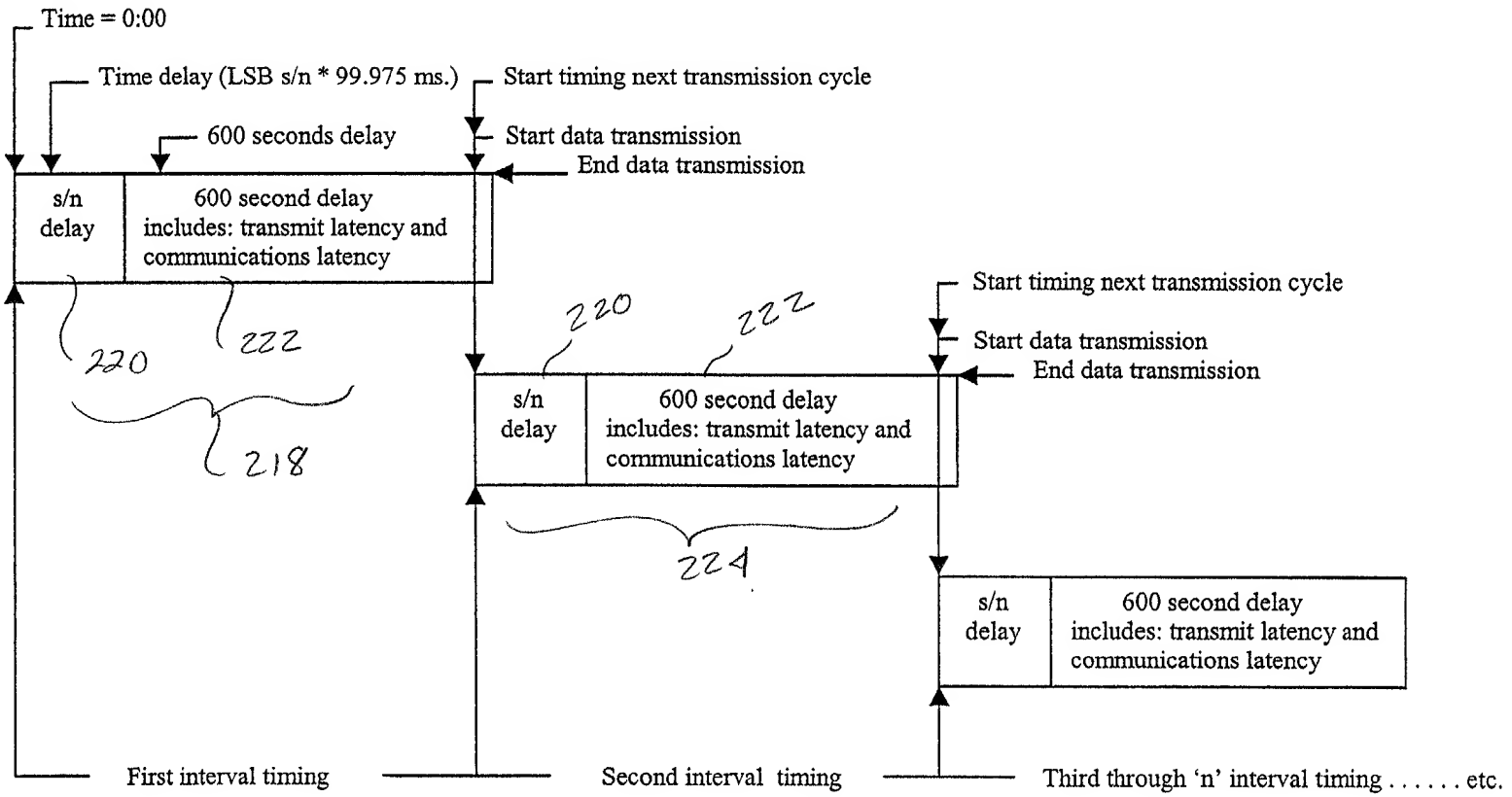

Concentrator Transceiver Block Diagram
Transceiver IO and Control Lines
DATA_IN
DATA_OUT
DATA_CLK
CS_0
CS_1
CS_2
CS_3
FM_OUT
AM_OUT
FM_or_AM
SIG_DET
LOCK
MOD_IN
RSSI_OUT (FM RSSI only)
AFC_OUT
T/R*
99.9 MHz Synthesized LO
Rise & Fall Time Control
RX VCO
TX VCO
PLL
AFC Processor
Rakon TCXO
EEROM
Chip Select Decoder
FM_ON (Enables Comparator)
AM_ON (Enables Comparator)
FM Analog
AM Analog
04/23/2000
12/12/1999
J.W. MacConnell
XCVR03.DWG

Figure 12

Pet Transmission Timing



Notes: The interval is defined as (LSB of PET ID * 99.975 milliseconds) + 600 seconds.
The actual transmission will begin at the end of the interval timing.
The interval+1 timing will begin immediately at the end of the current interval.
Initial timing for the interval+1 will overlap actual 'transmit' time of the current interval.

FIG. 13

PET Receiver Minimum Window

Note: The window required is 380 milliseconds (200ms early plus 180ms late) this represent the minimum time necessary to compensate for crystal tolerances and preamble detect.
200 milliseconds represents 180 milliseconds early plus 20 milliseconds allowed for preamble detect to occur.
The interval is maintained and represents the time from one preamble detect to the next preamble detect.

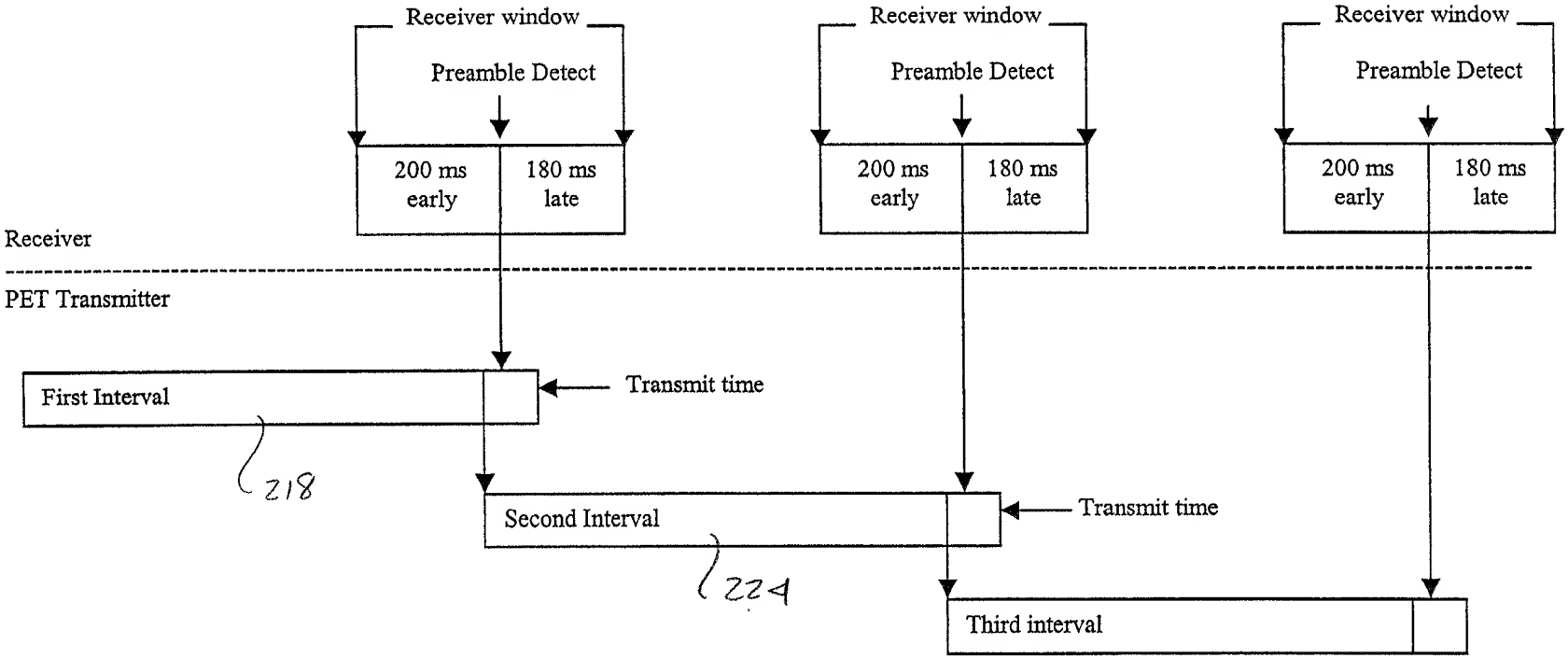


FIG. 14

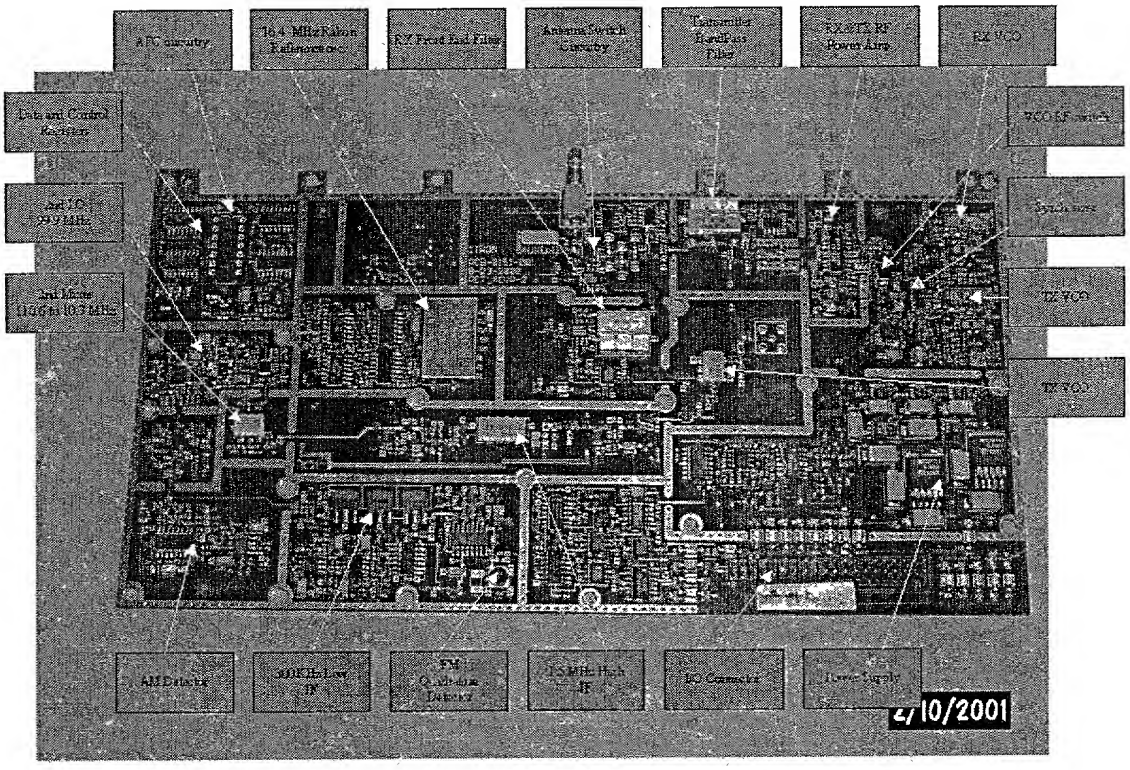

AFC circuitry
10.4 MHz Rubidium Reference
RX Front End Filter
Antenna Switch Circuitry
Transmitter Band Pass Filter
RX & TX RF Power Amp
EZ VCO
Data and Control Section
900 LF switch
2nd LO 99.9 MHz
2nd Mixer 10.6 to 10.7 MHz
TZ VCO
EZ VCO
AM Detector
300 KHz Low IF
FM Quadrature Detector
10.7 MHz High IF
IO Connector
Power Supply
2/10/2001

Fig. 15

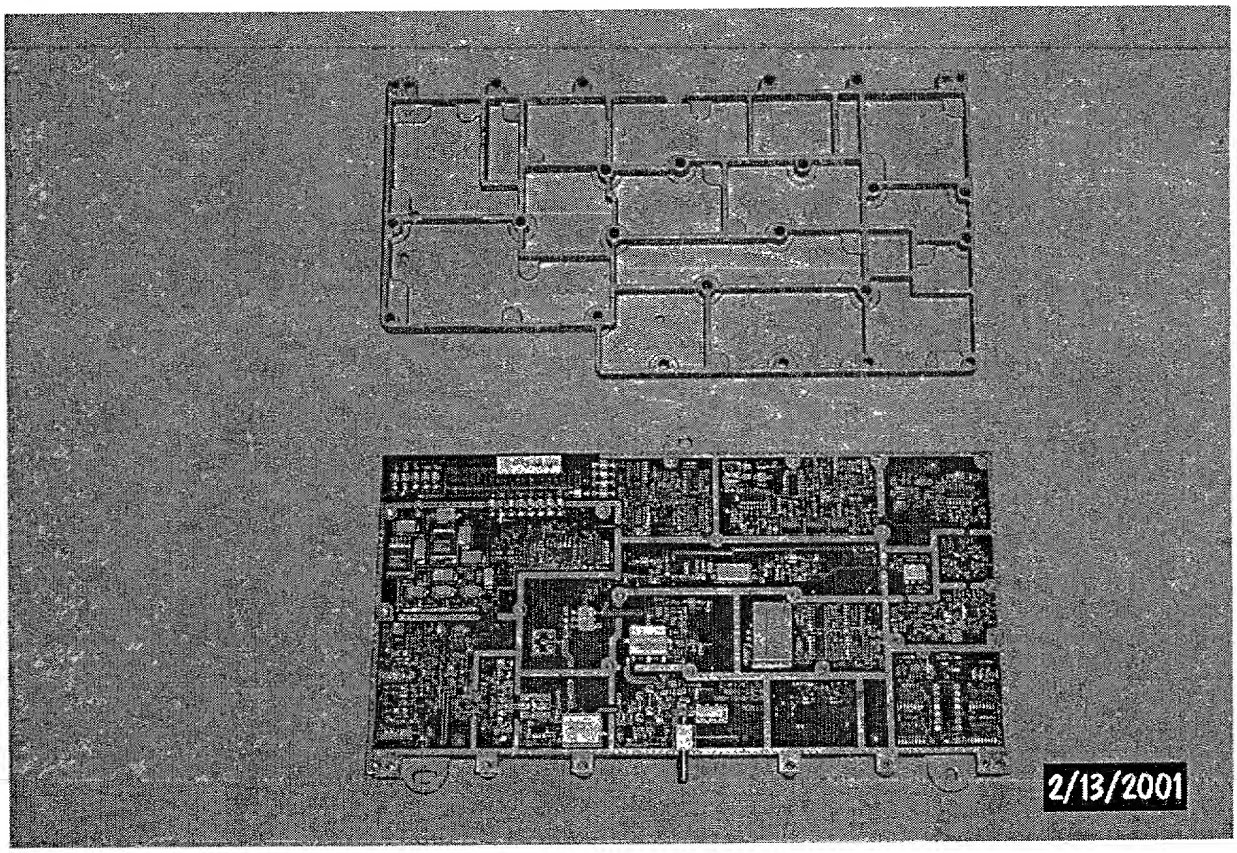


Fig. 16